was estimated from €1218 to €1314 per patient/year depending on different assumptions. These figures were higher than the ideal expected average cost derived from guidelines (from €1007 to €1021 per patient/year), so yielding to a potential reduction of €198 to €293 per patient/year. Monte-Carlo simulation showed that about 13% of patients in the real word setting presented higher treatment costs than the maximum expected cost. This proportion was much higher in moderate/severe patients compared to mild patients (28.0% and 11.1% respectively). **CONCLUSIONS:** An improvement of the adherence to GOLD guidelines in Spain should have not only clinical implications for COPD patients, but also an economic benefit for the National Health System. The potential savings in terms of medications costs have been estimated around 20% of the observed costs.

PRS10

PREVALENCE OF PULMONARY HYPERTENSION IN GERMANY—ESTIMATIONS BASED ON A TOP-DOWN APPROACH

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OBJECTIVES: To evaluate the prevalence of pulmonary hypertension (PH) in Germany as epidemiological data for PH are lacking. **METHODS:** The study followed a top-down approach, based on German secondary statistics (based on ICD-10 codes) and published literature. Several secondary statistics were taken into account: Official German statistics on nationwide mortality rates, ADT ("AbrechnungsDatenTransfer") panel data from "Zentralinstitut für die kassenärztliche Versorgung", and diagnosis statistics from IMS Health. Data on prevalence of PH related to connective tissue diseases, HIV infection, chronic obstructive pulmonary disease (COPD), obstructive sleep apnoea syndrome (OSAS), left ventricular systolic dysfunction (LVSD) and pulmonary embolism (PE) were extracted from published literature 1990 to 2006 (peer-reviewed journals). Numbers of PH cases were extrapolated for Germany, based on prevalence data for the underlying diseases. **RESULTS:** Based on secondary statistics, number of cases in 2002 with idiopathic pulmonary arterial hypertension (ICD I27.0) ranged from 1400 to almost 2900 cases, and number of cases with unspecific pulmonary heart disease (ICD 27.9) ranges from 1700 up to 10,400 cases. Based on literature data, prevalence of PH in patients with diseases like connective tissue diseases or HIV infection ranges between 2480 and 11,160 cases. PH caused by LVSD affects about 380,000 patients. Cases of PH associated with COPD, OSAS or PE range from 191,160 to 496,320. Summing up, between 574,100 and 889,900 patients were estimated to be affected by PH. **CONCLUSION:** The presented analysis is the first robust estimation of the prevalence of PH for Germany. Although the subgroup of pulmonary arterial hypertension (WHO Group I) is shown to be rare, secondary forms with estimated 570,000 to 900,000 patients affected by PH should be considered of relevance in regard to socioeconomic aspects. With respect to these numbers the medical community should focus on structural aspects of care for patients with this severe disease.

PRS11

THE TREATMENT OF RESPIRATORY DISEASES AND HEALTH CARE BUDGET IMPACT WITHIN SLOVAKIA

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OBJECTIVES: To analyse the utilisation of drugs for treatment of respiratory diseases (ATC group: R) within Slovakia between 1996 and 2004 and to asses the economic consequences of the medications. **METHODS:** For 1996–2004, the data about consumption of drugs for treatment of respiratory diseases were collected, in accordance with classification ATC and DDD measurement unit. This analysis focused on the situation in asthma medication in more detail. Data of wholesalers, who are legally obliged provide this information to the Slovak Institute for Drug Control, was used for the analysis. The results were expressed in the numbers of packages, finance units (€) and defined daily doses per 1000 inhabitants per day (DID). **RESULTS:** A significant increase in the medication of respiratory diseases (in 1996 (98.29), in 2000 (92.55) and in 2004 (134.11) in term of DID can be seen from this analysis. The results show the consumption (in term of DID) of selective beta-2-adrenoreceptor agonists in 1996 (3.61), in 2000 (3.80) and in 2004 (2.55), adrenergics in 1996 (1.40), in 2000 (2.04) and in 2004 (5.91), glucocorticoids in 1996 (1.43), in 2000 (4.18) and in 2004 (5.26), anticholinergics in 1996 (0.38), in 2000 (1.37) and in 2004 (2.70), xanthines in 1996 (7.24), in 2000 (8.80) and in 2004 (7.20), leukotriene receptor antagonists in 1997 (0.03), in 2000 (0.33) and in 2004 (0.44). In financial terms, the consumption of selective beta-2-adrenoreceptor agonists (€2,385,000), adrenergics (€9,679,000), glucocorticoids (€3,810,000), anticholinergics (€1,464,000), xanthines (€1,366,000), leukotriene receptor antagonists (€1,649,000) for the year 2004 can be seen from this study. **CONCLUSIONS:** Usage of generic drugs for the treatment of respiratory diseases brought about a dramatic increase in the consumption of drugs in this field but the financial expenditures for health insurance funds have been remained under control.

PRS12

EXPECTED VALUE OF PERFECT INFORMATION: A PRACTICAL EXAMPLE OF REDUCING DECISION UNCERTAINTY BY CONDUCTING ADDITIONAL RESEARCH

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OBJECTIVES: Expected Value of Perfect Information (EVPI) analysis is a natural extension of probabilistic modelling and provides information about the value of collecting additional information to eliminate or reduce uncertainty. A partial EVPI analysis provides information about the model parameters for which the collection of additional data is most useful. The objective of this study is to determine the impact of additional data collection on the remaining uncertainty in a probabilistic model for the bronchodilator treatment of patients with chronic obstructive pulmonary disease (COPD). The value of additional information is weighted against the costs of collecting the data. **METHODS:** We used a probabilistic Markov model with a time-horizon of 5 years. Primary outcome parameters were the costs per QALY. Stochastic input parameters of the model included probabilities to transition between disease states, probabilities to experience an exacerbation, and utilities and resource use associated with disease states and exacerbations. Because utilities proved to contribute substantially to the overall EVPI, additional data about utilities associated with COPD severity states were collected in 1235 patients participating in a randomised clinical trial. **RESULTS:** Before collecting additional data the overall

EVPI was €1368 at a value of the ceiling ratio of €20,000. EVPPI analysis showed that utilities had the largest contribution to the overall EVPI. The partial EVPI for this subset of input parameters was €517. Incorporating the newly collected data on utilities into the model reduced the overall EVPI to €563 and the partial EVPI for the utility input parameter to approximately €0. **CONCLUSIONS:** Collecting additional information on utilities strongly reduced the overall and partial EVPI. At the population level, the value of collecting additional data on utilities outweighed the costs of data collection. Value of information analysis proved to be useful to determine the parameters for which additional data collection is most beneficial.

PRS13

USING PATIENT DESCRIPTORS TO DEVELOP A PRO MEASUREMENT STRATEGY FOR CLINICAL TRIALS: EVALUATING THE COPD PATIENT'S EXPERIENCE OF DYSPNEA

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OBJECTIVES: There are currently no well-validated Patient Reported Outcome (PRO) tools to measure dyspnea in COPD patients that have been accepted for label claims. Guidelines for measuring PROs to support label claims encourage patient input to define endpoints for clinical trials. This study was designed to understand COPD patients' experience of dyspnea, and inform strategy for measuring PRO endpoints in clinical trials. **METHODS:** Seventy-eight individuals (55% male; mean age 58 years) with moderate to severe COPD (MRC grades III-V) across 6 countries participated in interviews/focus groups, describing their breathing difficulties, severity, impacts and fluctuations. Themes were identified from a systematic content review of the transcripts, and further reviewed by an additional 18 patients. SESULTS: Six distinct sensations of dyspnea were reported, with patients across multiple cultures demonstrating the ability to differentiate between sensations. Patients reported a high level of diurnal and day-to-day variation in both the nature and severity of symptoms. A conceptual model was developed based on this qualitative work and discussion with an expert panel of six clinicians and three psychometric experts. Patients confirmed the multi-sensational nature of dyspnea that is also suggested within the literature—"a subjective experience of breathing discomfort that consists of qualitatively distinctive sensations that vary in intensity". However, existing measures evaluate dyspnea as a one-dimensional symptom (a single construct of shortness of breath) with a broad recall period (one to two weeks). **CONCLUSIONS:** The model showed that a daily diary (with symptoms differentiated and assessed by patient-generated descriptive language) is more relevant for evaluating patients' experience of dyspnea in clinical trials. This work demonstrates the value of extensive, multi-cultural patient input during early stages of PRO development to ensure that the endpoint strategy for supporting labelling claims adequately fits the conceptual model for the patient experience of that condition.

PRS14

PERSISTENCE WITH TIOTROPIUM: A COMPARISON WITH ESTABLISHED MEDICATIONS FOR COPD

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OBJECTIVES: Tiotropium is a once-daily inhaled anticholinergic maintenance treatment with demonstrated effectiveness in chronic obstructive pulmonary disease (COPD). We aimed to compare persistence of tiotropium-use with other respiratory drugs in COPD in current clinical practice. **METHODS:** The PHARMO database includes, among others, drug-dispensing and hospital discharge records for >2 million subjects in The Netherlands. All probable COPD-patients were identified by new respiratory drug use (age >54 yrs) or COPD-hospitalizations. New users of tiotropium, ipratropium, long-acting beta-agonists (LABAs), or fixed combination of inhaled corticosteroids and LABA (ICS&LABA), in 1998–2003, were included in the study. Persistence was assessed quarterly during the first year of follow-up. Patients with a proportion of days covered (PDC) ≥80% were considered persistent. Persistence was analysed using generalised estimating equations model. **RESULTS:** About 37% of new users of tiotropium continued treatment for one year, compared with 14% for ipratropium, 13% for LABA, and 17% for ICS&LABA. Multivariate analyses showed that tiotropium-users were 2–3 times more persistent with their therapy than patients using ipratropium (relative risk [RR]: 2.0; 95% confidence interval [CI]: 1.8–2.3), LABA (RR: 2.9; 95%CI: 2.4–3.6), or ICS&LABA (RR: 2.4; 95%CI: 2.1–2.8), respectively. Male gender, age >70 years, pulmonologist as first prescriber, prior use of other respiratory drugs, and previous hospitalization for COPD were all associated with enhanced persistence with the initial drug-therapy. **CONCLUSIONS:** Persistence with tiotropium was increased compared to other respiratory drugs in COPD in clinical practice. Additional research is required to understand the reasons for these higher persistence levels. Enhanced treatment persistence may offer benefits to both patients and society in terms of decreased morbidity and costs.

PRS15

IMPROVING THE PERSISTENCE OF PATIENTS UNDERGOING SUBLINGUAL IMMUNOTHERAPY: SCORING AND VALIDATION OF A PATIENT-MANAGEMENT TOOL

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OBJECTIVES: Long-term patient adherence to treatment is the key issue in the efficacy of sublingual immunotherapy (SLIT). To help clinicians to manage SLIT patients and improve their adherence, a specific questionnaire: QUARTIS, has been developed and validated. **METHODS:** Relevant concepts were identified through a combination of literature research and clinician and patient interviews. After comprehension tests with patients, two pilot versions, one for patients beginning SLIT (QUARTIS-Start) and one for patients undergoing SLIT (QUARTIS-Follow-up), were drawn up and pilot tested in clinical practice. A cross-sectional observational study including 191 adult patients with allergic rhinitis beginning SLIT and 381 undergoing SLIT was conducted to reduce the questionnaires, create their scoring and assess their psychometric properties. The ability of the QUARTIS-Follow-up to predict patients' intentions to complete SLIT, motivations to continue the course of SLIT, and adherence